LNP™ ELCRES™ ML4412

DESCRIPTION

LNP ELCRES ML4412 is a 20% glass fiber reinforced, medium flow, impact modified, injection moldable grade. LNP ELCRES ML4412 is available in opaque colors only and is an excellent candidate for a broad range of applications that require a combination of stiffness and ductility.

TYPICAL PROPERTY VALUES

Revision 20200212

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, brk, Type I, 50 mm/min	100	MPa	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	3	%	ASTM D 638
Tensile Modulus, 50 mm/min	6300	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	160	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	5800	MPa	ASTM D 790
Tensile Stress, break, 50 mm/min	110	MPa	ISO 527
Tensile Strain, break, 50 mm/min	3	%	ISO 527
Tensile Modulus, 1 mm/min	6500	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	165	MPa	ISO 178
Flexural Modulus, 2 mm/min	5700	MPa	ISO 178
IMPACT			
Izod Impact, unnotched, 23°C	700	J/m	ASTM D 4812
Izod Impact, notched, 23°C	140	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	25	J	ASTM D 3763
Izod Impact, notched 80*10*3 +23°C	17	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*3 -30°C	12	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*3 sp=62mm	17	kJ/m²	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*3 sp=62mm	12	kJ/m²	ISO 179/1eA
THERMAL			
HDT, 0.45 MPa, 3.2 mm, unannealed	135	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	132	°C	ASTM D 648
CTE, -40°C to 40°C, flow	2.6E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	6.8E-05	1/°C	ASTM E 831
Vicat Softening Temp, Rate B/120	142	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	137	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	133	°C	ISO 75/Ae
Relative Temp Index, Elec (1)	80	°C	UL 746B
Relative Temp Index, Mech w/impact (1)	80	°C	UL 746B
Relative Temp Index, Mech w/o impact (1)	80	°C	UL 746B
PHYSICAL			
Specific Gravity	1.33	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm	0.2 – 0.3	%	SABIC method
Mold Shrinkage, xflow, 3.2 mm	0.4 – 0.5	%	SABIC method
Melt Flow Rate, 300°C/1.2 kgf	11	g/10 min	ASTM D 1238
Density	1.33	g/cm³	ISO 1183

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Water Absorption, (23°C/sat)	0.1	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.03	%	ISO 62
Melt Volume Rate, MVR at 300°C/1.2 kg	10	cm³/10 min	ISO 1133
ELECTRICAL			
Dielectric Constant (Dk), 1.1 GHz	3.11	-	ASTM ES 7-83
Dissipation Factor (Df), 1.1 GHz	0.0064	-	ASTM ES 7-83
Dielectric Constant, 1.9 GHz	3.13	-	SABIC method
Dissipation Factor, 1.9 GHz	0.006	-	SABIC method
Dielectric Constant, 5 GHz	3.14	-	SABIC method
Dissipation Factor, 5 GHz	0.0051	-	SABIC method
Dielectric Constant, 10 GHz	3.16	-	SABIC method
Dissipation Factor, 10 GHz	0.0063	-	SABIC method
FLAME CHARACTERISTICS (1)			
UL Yellow Card Link	E207780-104298581	-	-
UL Recognized, 94HB Flame Class Rating	≥0.4	mm	UL 94
INJECTION MOLDING			
Drying Temperature	110	°C	
Drying Time	3 – 6	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	285 – 310	°C	
Nozzle Temperature	285 – 305	°C	
Front - Zone 3 Temperature	280 – 300	°C	
Middle - Zone 2 Temperature	270 – 290	°C	
Rear - Zone 1 Temperature	260 – 280	°C	
Mold Temperature	80 – 110	°C	
Back Pressure	0.1 – 0.3	MPa	
Screw Speed	50 – 90	rpm	

(1) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.

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